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## SECTION 3.0 RCRA POND GAS MONITORING PROGRAM

The RCRA Pond post-closure phosphine (PH<sub>3</sub>) monitoring program was developed utilizing over 2 years of gas monitoring data at the RCRA ponds obtained pursuant to the RCRA Pond Unilateral Administrative Order for Removal Actions (“RCRA Pond UAO,” EPA, 2010b), specifically Task 1A of the UAO. As specified in EPA’s October 26, 2010 modification to the RCRA Pond UAO SOW addendum, the objectives of the UAO Assessment Study were to collect, assemble and evaluate:

*“the data and information needed to: 1) demonstrate where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) to determine the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment.”*

The RCRA Pond post-closure gas monitoring program is described in this section of the *RCRA Pond Post-Closure Plan* (“Plan”).

### 3.1 RCRA POND GAS MONITORING PROGRAM OBJECTIVES

The Data Quality Objectives (DQOs) for the RCRA Pond post-closure gas monitoring are presented in the *FMC Gas Monitoring Quality Assurance Plan (QAPP)* as included in Appendix A-4 of this Plan. The following presents a discussion on the post-closure gas monitoring objectives and structure of the monitoring program.

The overall objective of the RCRA Pond gas monitoring program is the effective and timely detection of gas concentrations within the closed units and appurtenant post-closure systems at levels that require maintenance action, additional monitoring, and/or initiation of gas extraction and treatment to control, minimize, or eliminate post-closure escape of hazardous constituents to the atmosphere to the extent necessary to protect human health and the environment. A coequal objective is the effective and timely detection of gas concentrations within the closed units and appurtenant post-closure systems at levels that require maintenance action, additional monitoring, and/or initiation of gas extraction and treatment to protect and preserve the closure cover and post-closure monitoring systems (“post-closure infrastructure”).

In order to protect post-closure monitoring and maintenance (and other) personnel within the RCRA Ponds area, the OSHA Permissible Exposure Limits (PELs) for phosphine (PH<sub>3</sub>) were used to guide development of the gas monitoring program and the trigger levels for corrective maintenance, additional monitoring, and initiation of gas extraction and treatment.

Summary of Phosphine Exposure Limits	
Permissible Exposure Limit (PEL)	0.3 ppm
Short-Term Exposure Limit (STEL)	1.0 ppm
Immediately Dangerous to Life or Health (IDLH)	50 ppm

In order to protect and preserve the closure cover and post-closure monitoring systems (“post-closure infrastructure”), the Lower Explosive Limit (LEL) for PH<sub>3</sub> of approximately 20,000 ppm was used to develop the gas monitoring program and specifically the trigger for initiation of gas extraction and treatment. After reviewing the propagated relative error for the calculation of source gas concentrations when using a gas extraction system (GES) unit for routine perimeter pipe monitoring and/or gas extraction and treatment, the propagated relative error is 15% (rounded up from 12.5%). As an added margin of safety, the propagated relative error was “doubled” to arrive at the 14,000 ppm PH<sub>3</sub> (70 percent of the LEL) for the perimeter pipe concentration that triggers gas extraction and treatment.

### 3.2 POST-CLOSURE GAS MONITORING ACTIVITIES

The gas monitoring activities, frequency, action levels and response actions are summarized on Figures 3-1 and 3-2 and Table 3-1 and described in greater detail in this section. The following subsections provide a description of the post-closure gas monitoring activities for the RCRA Ponds.

#### 3.2.1 POND APPURTENANCE MONITORING

The DQOs for appurtenance PH<sub>3</sub> monitoring are presented in Table 1.1 of the *RCRA Pond Quality Assurance Project Plan for Gas Monitoring (“Gas Monitoring QAPP”)* (see Appendix A-4 of this *Plan*). A summary of the appurtenance monitoring is provided on Table 3-2 and the specific field sampling procedures are presented in Section 2.3 of Appendix A-5 *Field Sampling Plan for RCRA Pond Gas Monitoring (“Gas Monitoring FSP”)* of this *Plan*. RCRA pond appurtenance monitoring results (and any follow-up investigation or monitoring results) will be summarized in the annual *RCRA Pond Annual Post-Closure Report*.

The RCRA ponds will be periodically monitored for potential release(s) of PH<sub>3</sub> to air from around any cap “appurtenances.” RCRA pond cap appurtenances that will be monitored for potential PH<sub>3</sub> are:

- *TMP Enclosures* – Each temperature monitoring point (TMP) is enclosed within a metal enclosure box to protect the TMP well-head. Table 3-2 shows the number of TMPs for each of the RCRA ponds. At the Pond 16S TMP enclosures, the appurtenance leak detection monitoring will include the sample ports, condensate

drain valve and/or maintenance access ports on the Gas Extraction and Treatment System (GETS) piping from the TMP enclosure penetration to the solenoid valve.

- *ET Cap Drainage Sumps* – Evapo-transporation (ET) cap drainage collection sumps are installed at Ponds 8S, the Phase IV Ponds, and Ponds 15S, 16S and 18A. Table 3-2 shows the number of ET cap drainage sumps at each of these RCRA ponds.
- *LCDRS Collection Sumps* – Leachate Collection, Detection and Removal System (LCDRS) sumps are present at Ponds 8E, 9E, 15S, 16S, 17, and 18A. Table 3-2 shows the number of LCDRS sumps at each of these RCRA ponds.
- *Instrument Panels* – “Instrument panel” is a generalized term for the steel enclosures that house (1) pressure and temperature data displays / recording modules, (2) pressure and temperature system audible / visual alarms if separate from the data display housing and (3) power supply / switches. Table 3-2 shows the number of instrument panels for each of the RCRA ponds.
- *Perimeter Piping Standpipes* – Each of the RCRA pond cover systems is equipped with perforated perimeter piping installed immediately under the GCL/HDPE cap liner. Each of the perimeter piping systems has one or more outlets (“standpipes”) that exit to the surface outside of the cap HDPE anchor trench. Table 3-2 shows the number of standpipes for each of the RCRA ponds.

The locations of the pond appurtenances are shown on Figures 3-3 through 3-10 of the Plan. The instrument panels associated with the discontinued temperature and pressure monitoring are no longer used to acquire / display temperature or pressure data. FMC will continue to perform instrument panel gas monitoring at these panels per the Plan and Section 2.3.6 of the *Gas Monitoring FSP*. FMC may submit a plan to EPA to disconnect and remove these instrument panels. Upon EPA approval, the panels will be removed and will be eliminated from the instrument panel gas monitoring.

Measurement of PH<sub>3</sub> at each RCRA pond appurtenance will be performed to monitor for potential releases of PH<sub>3</sub> from the appurtenance to the air. The sampling approach is similar for all air monitoring around appurtenances, with minor differences for each appurtenance to account for the differences in their physical size and shape. The number of each type of appurtenance monitored at each RCRA pond is presented in Table 3-2. In general, the monitoring involves:



- *Air monitoring* – monitoring is performed around the appurtenance using the Draeger Pac III field instrument<sup>1</sup> (0-20 ppm range) at a distance of approximately 12 inches as follows:
  - TMP enclosures – Monitoring is performed horizontally around the outside perimeter of the TMP enclosure, at elevations of 6 inches above the cap surface and at the top of the TMP enclosure.
  - ET cap drainage sumps - Monitoring is performed horizontally around the outside perimeter of the sump enclosure lid, at the elevation of the sump lid contact point.
  - LCDRS collection sumps - Monitoring is performed horizontally around the outside perimeter of the sump enclosure lid, at the elevation of the sump lid contact point.
  - Instrument panels - Monitoring is performed vertically around the outside perimeter of the instrument panel enclosure door seal.
  - Perimeter piping standpipes - Monitoring is performed horizontally around the outside base of the perimeter piping standpipe, at the elevation of approximately 6 inches above the ground surface.
- *Leak detection* – monitoring around the appurtenance using the Draeger Pac III field instrument (0-20 ppm range) at a distance of approximately 1 to 2 inches as follows:
  - TMP enclosures - Monitoring is performed around the outside perimeter of the TMP enclosure lid, TMP base, and all openings. At the Pond 16S TMP enclosures, the appurtenance leak detection monitoring will include the sample ports, condensate drain valve and/or maintenance access ports on the GETS piping from the TMP enclosure penetration to the solenoid valve.
  - ET cap drainage sumps - Monitoring is performed around the outside perimeter of the sump enclosure lid, inspection lid, and sump overflow.
  - LCDRS sumps - Monitoring is performed around the outside perimeter of the sump enclosure lid, inspection lid, and sump overflow.
  - Instrument panels - Monitoring is performed around the outside perimeter of the instrument panel enclosure door seal and conduit connections.
  - Perimeter piping standpipes - Monitoring is performed around the outside base of the perimeter piping standpipe and around valves and flanges.

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<sup>1</sup> Draeger has discontinued manufacturing the Pac III monitors but according to a Draeger representative they will continue to provide sensors and basic repairs for the PAC III. The PAC III is being replaced by the Draeger PAC 7000 for the low range PH3 sensor (0 – 20 ppm) and the by the X-AM 5000 for the high-range PH3 sensor (0-1,000 ppm). FMC may utilize the Pac III, Pac 7000, X-AM 5000 or equivalent monitors for the gas monitoring program.

- *Inside Appurtenances* – monitoring inside the appurtenance using the Draeger Pac III field instrument (0-20 ppm range or 0-1,000 range) as follows:
  - TMP enclosures – Monitoring is performed at a depth of approximately 1.5 feet inside the TMP enclosure.
  - ET cap drainage sumps – Monitoring is performed at a depth approximately 3-4 feet from the top of the sump.
  - LCDRS collection sumps - Monitoring is performed at a depth approximately 3-4 feet from the top of the sump.
  - Instrument panels – Monitoring is performed approximately 6 inches into the instrument panel.

#### Monitoring Frequency and Action Levels:

The appurtenance monitoring frequency is based on the perimeter pipe PH3 concentration and results of on-going appurtenance monitoring as follows:

<u>Perimeter Pipe PH3 Concentration</u>	<u>Monitoring Frequency</u>
< 2,000 ppm	Quarterly / Annually
2,000 – 9,999 ppm	Quarterly
10,000 – 13,999 ppm	Monthly
≥ 14,000 ppm	Monthly

For RCRA Ponds with perimeter pipe PH3 concentrations below 2,000 ppm, the appurtenance monitoring will initially be performed on a quarterly basis. If there are no PH3 detections at or above the PH3 action levels for three (3) consecutive quarters of monitoring, the frequency will be reduced to annually for that pond. If there is a PH3 detection above the action levels during annual monitoring, the monitoring will return to quarterly (or other frequency corresponding to the perimeter pipe PH3 concentration). For RCRA Ponds with perimeter pipe PH3 concentrations greater than 2,000 ppm, the appurtenance monitoring remains at the specified frequency until the perimeter pipe PH3 concentration either drops below 2,000 ppm (at which point the monitoring frequency decreases to quarterly / annually) or increases to a higher range (e.g., from the range between 2,000 and 9,999 ppm to the range between 10,000 and 13,999 ppm, the monitoring frequency increases from quarterly to monthly).

The PH3 action levels for appurtenance monitoring are:

Air or Leak Detection Monitoring PH3:      ≥ 0.05 ppm

Inside Monitoring PH3:                              ≥ 0.3 ppm, ≥ 1.0 ppm and ≥ 35 ppm

The responses related to these action levels are described below.

### Response Actions:

#### Air or Leak Detection Monitoring PH3 > 0.05 ppm or Inside Monitoring PH3 > 0.3 ppm

- Perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial exceedance.
- If air or leak detection re-monitoring < 0.05 ppm and/or inside re-monitoring < 0.3 ppm, re-monitor location(s) of exceedance(s) one month from initial exceedance.
- If air or leak detection re-monitoring  $\geq$  0.05 ppm and/or inside re-monitoring  $\geq$  0.3 ppm, perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial (or re-monitoring) exceedance.
- If three consecutive results of air or leak detection re-monitoring  $\geq$  0.05 ppm and/or inside re-monitoring  $\geq$  0.3 ppm, monitor perimeter gas collection standpipe within 10 days.

#### Inside Monitoring PH3 > 1.0 ppm

- Perform maintenance and re-monitoring per actions for Inside Monitoring  $\geq$  0.3 ppm above.
- Monitor perimeter gas collection standpipe(s) within 10 days – change frequency of monitoring if indicated by perimeter pipe PH3 concentration.

#### Inside Monitoring PH3 > 35 ppm

- Begin gas extraction and treatment within 10 days – change frequency of monitoring based on perimeter pipe PH3 concentration (GES operating data or perimeter pipe monitoring) or increase PH3 mass removal rate if gas extraction and treatment is in progress.

In addition to the above action levels, individuals performing RCRA pond appurtenance monitoring will be equipped with an industrial hygiene PH3 monitor, set to alarm at 0.3 ppm and 1.0 ppm as indicated in the *RCRA Pond Area Work Rules*. Any industrial hygiene alarm of 0.3 ppm PH3 in air (indicating PH3 concentrations in air of 0.3 to 0.99 ppm) that occur will trigger an investigation of the source, extent, and potential corrective action provided that these measures can be safely performed. Any air monitoring reading of 1.0 ppm PH3 or greater in air will also trigger an immediate (initiate within 15 minutes of such reading) round of fenceline monitoring at facility boundary monitoring sites 1 through 9, as described in Section 3.2.4 and Appendix A-5 Field Sampling Plan for RCRA Pond Gas Monitoring of this *Plan*. Note that for RCRA pond appurtenance monitoring, fenceline monitoring is not triggered solely by leak detection results at 1 to 2 inches from the appurtenance or inside the appurtenance that show 1.0 ppm PH3 or greater.

### Maintenance Actions:

The maintenance actions that will be taken if an appurtenance gas monitoring action level(s) is exceeded during appurtenance monitoring may include, but are not limited to the following:

<u>Appurtenance</u>	<u>Maintenance Action(s)</u>
TMP enclosures	<ul style="list-style-type: none"><li>• Tighten flange bolts and/or replace flange gasket;</li><li>• Add and / or compact soil around the base of the TMP enclosure base (concrete pad); and / or</li><li>• At the Pond 16S TMP enclosures, repair or replace any faulty sample port(s), condensate drain valve(s) and/or maintenance access port(s) on the GETS piping from the TMP enclosure penetration to the solenoid valve.</li></ul>
ET cap drainage sumps	<ul style="list-style-type: none"><li>• Add water to assure water seal on drainage pipe down-leg in receiver tank; and/or</li><li>• Add and / or compact soil around the lift station manhole rings.</li></ul>
LCDRS sumps	None currently identified
Instrument panels	<ul style="list-style-type: none"><li>• Repair / replace conduit seals</li></ul>
Perimeter pipe standpipes	<ul style="list-style-type: none"><li>• Tighten, repair or replace cap</li></ul>

Any maintenance required based on the appurtenance monitoring results will be performed as soon as practicable. Repairs and/or maintenance will commence within ten (10) days of the initial monitoring result that triggered the maintenance, unless delayed as specified below. Commencement of repairs and/or maintenance means performing actual field work, in the case of simple or minor maintenance, or, in the case of more complex or larger scale maintenance, initiation of engineering, planning and/or procurement of additional materials to perform the maintenance and/or repairs. Maintenance or repairs will not be performed if frozen soil / snow cover / muddy conditions exist such that cap surface could be damaged as a result of attempting to implement the repair/maintenance activity or if that work is not feasible due to frozen soil conditions (typically between November 15 through April 15) at the area where maintenance/repairs are required. If maintenance or repairs are delayed by surface conditions, any repairs or maintenance will commence within ten (10) days of the presence of acceptable cap surface conditions. In the event commencement of maintenance or repairs must be delayed beyond ten (10) days for cause(s) other than unacceptable surface conditions as described above, FMC will notify EPA within the initial 48 hours of the ten (10) day period. The notification will include a description of the reason(s) for the necessary delay and a schedule for commencing the maintenance and/or repairs. All necessary repairs

will be performed by FMC. Documentation of all repairs or maintenance activities will be maintained in the Operating Record on-site as described in Section 7.3.

### 3.2.2 POND PERIMETER GAS COLLECTION PIPE MONITORING

The DQOs for perimeter gas collection pipe PH3 monitoring are presented in Table 1.2 of the *Gas Monitoring QAPP* (see Appendix A-4 of this *Post-Closure Plan*). The specific field sampling procedures are presented in Section 2.4 of Appendix A-5 Field Sampling Plan for RCRA Pond Gas Monitoring of this *Plan*. RCRA pond perimeter gas collection pipe monitoring results will be summarized in the annual *RCRA Pond Annual Post-Closure Report*.

The perimeter gas collection pipe will be monitored utilizing a GES unit connected to the perimeter gas collection piping outlet(s) (“standpipe(s)”). Seven of the RCRA ponds have a single standpipe and the other four have multiple standpipes:

- Pond 8S: 1 Standpipe
- Pond 8E: 1 Standpipe
- Pond 9E: 1 Standpipe
- Phase IV: 4 Standpipes (one each at 11S, 12S, 13S and 14S)
- Pond 15S: 2 Standpipes
- Pond 16S: 4 Standpipes
- Pond 17: 5 Standpipes
- Pond 18A: 2 Standpipes

The locations of the perimeter gas collection pipe standpipes are shown on Figures 3-3 through 3-10 of the *Plan*.

In summary, a GES unit will be connected to purge the perimeter piping of at least one total piping volume. The inlet gas to the GES unit will be diluted with ambient air to less than 500 ppm (a limit on the treatment capability of the carbon). The total GES gas flowrate will be measured along with inlet (pond perimeter pipe) gas flowrate. The PH3 concentration is measured at the inlet to the GES primary absorber using the Draeger Pac III field instrument (0-1,000 ppm range), which allows for calculating the PH3 concentration in the perimeter piping. If this calculated perimeter piping gas concentration is less than 10,000 ppm PH3, a direct sample of the perimeter gas will be made and diluted using the calibrated dilution manifold.

Phosphine concentration will be measured using the Draeger Pac III field instrument<sup>2</sup> (0-1,000 ppm range). If the concentration is greater than 10,000 ppm using the GES system, then the measurement will be recorded and a concentration will be calculated based upon the operational data of the GES.

At ponds that have multiple standpipes, each of the standpipes will be monitored when the perimeter gas collection pipe monitoring is performed. If after five (5) years of monitoring, one of the standpipes is consistently measured with the highest PH3 concentration compared to the other standpipes, FMC may request and, upon EPA approval, monitoring would only be performed at the standpipe with the highest PH3 concentration thereafter.

#### Monitoring Frequency and Action Levels:

The perimeter pipe monitoring frequency is based on the perimeter pipe PH3 concentration and action levels (concentration ranges) as follows:

<u>Perimeter Pipe PH3 Concentration</u>	<u>Monitoring Frequency</u>
< 2,000 ppm (at ponds where gas extraction has not been required)	If triggered by exceedance of appurtenance monitoring action level(s)
2,000 – 9,999 ppm	Quarterly
10,000 – 13,999 ppm	Monthly
≥ 14,000 ppm	Monthly <sup>1</sup>

<sup>1</sup> GES unit(s) operating data (average calculated source gas) and monitoring (if multiple standpipes without operating GES at one or more standpipes).

If the monitored perimeter pipe PH3 concentration is 2,000 ppm or greater (based on highest perimeter pipe standpipe concentration at ponds with multiple standpipes), the perimeter pipe monitoring frequency will be adjusted as shown on Figure 3-2. Once perimeter pipe monitoring has been initiated due to a monitoring result of 2,000 ppm or greater, a minimum of 4 years of perimeter pipe monitoring will be conducted. An example of the decreasing perimeter pipe monitoring frequency schedule is summarized below:

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<sup>2</sup> Draeger has discontinued manufacturing the Pac III monitors but according to a Draeger representative they will continue to provide sensors and basic repairs for the PAC III. The PAC III is being replaced by the Draeger PAC 7000 for the low range PH3 sensor (0 – 20 ppm) and the by the X-AM 5000 for the high-range PH3 sensor (0-1,000 ppm). FMC may utilize the Pac III, Pac 7000, X-AM 5000 or equivalent monitors for the gas monitoring program.

“Starting” Monitoring Frequency	Result(s) of Perimeter Pipe Monitoring	Monitoring Frequency if Perimeter Pipe PH3 Results Remain < 2,000 ppm
Quarterly (“last” result $\geq$ 2,000 ppm, <10,000 ppm)	Current result < 2,000 ppm	Quarterly
Quarterly	4 consecutive quarterly results < 2,000 ppm	Semiannual
Semiannual	2 consecutive semiannual results < 2,000 ppm	Annual
Annual	2 consecutive annual results < 2,000 ppm	Discontinue scheduled monitoring unless triggered by exceedance of appurtenance monitoring action level(s)

In the above example, if any of the quarterly, semiannual or annual results were 2,000 ppm or greater, the monitoring frequency would immediately revert to the monitoring schedule for the action level range for that result (i.e., quarterly for 2,000 to 9,999 ppm or monthly for 10,000 ppm or greater).

#### Response Actions:

Gas extraction and treatment will begin within 10 days at a RCRA pond(s) when the perimeter gas collection pipe PH3 concentration is greater than or equal to 14,000 ppm as measured at the highest (if multiple) standpipe. Gas extraction and treatment system operations and maintenance are described in Section 4 and detailed procedures are contained in Appendix A-6 GES Unit Operation and Maintenance Manual of this Plan.

#### 3.2.3 PERIMETER SURFACE AND CAP SURFACE MONITORING

The DQOs for perimeter surface and cap surface PH3 monitoring are presented in Table 1.3 of the *Gas Monitoring QAPP* (see Appendix A-4 of this *Post-Closure Plan*). A summary of the perimeter surface and cap surface monitoring is provided on Table 3.3 and the specific field sampling procedures are presented in Section 2.5 of Appendix A-5 of this Plan, entitled *Field Sampling Plan for RCRA Pond Gas Monitoring*. If triggered, RCRA pond perimeter surface and cap surface monitoring results (and any follow-up investigation or monitoring results) will be summarized in the annual *RCRA Pond Annual Post-Closure Report*.

Perimeter surface monitoring and, if triggered during perimeter scan, cap surface monitoring will be performed at any RCRA Pond(s) with a perimeter pipe PH3 concentration of 10,000 ppm or greater (including during operation of a gas extraction and treatment system(s)). However, surface scanning will not be performed if any of the following meteorological conditions are encountered:

- Rain, snow or other precipitation, based upon local observation;
- Average wind speeds greater than 10 miles per hour, based upon a hand-held anemometer reading;
- Instantaneous wind speed greater than 15 miles per hour, based upon a hand-held anemometer reading; and/or
- Snow cover or surface water accumulation (ponding), based upon local observation.

These meteorological parameters will be recorded prior to start of the perimeter surface scan.

#### Perimeter Surface Monitoring:

The perimeter surface scan involves scanning at an elevation of approximately 1 to 2 inches above ground surface, scanning a 6-foot-wide path outside the cap HDPE anchor trench around the RCRA pond(s). Data is recorded every 1 minute during the perimeter surface scan. The Draeger Pac III field instrument will be set to alarm at 0.05 ppm PH3. At any point during the perimeter surface scan, if the Draeger Pac III alarm goes off, a flag will be placed at that point and the perimeter surface scan will continue. Once the perimeter scan is completed on that pond, each flagged area will be investigated in an attempt to determine the source of the PH3 (e.g., if the PH3 is releasing from the surface or some appurtenance such as a TMP).

Each of the pond perimeter surface scanning areas will be sampled as a single sampling “cell.” The approximate lineal distance for scanning at each RCRA pond is as follows:

- Pond 8S = 1,550 feet
- Pond 8E = 1,725 feet
- Pond 9E = 3,520 feet
- Phase IV Ponds = 2,970 feet
- Pond 15S = 3,080 feet
- Pond 16S = 2,850 feet
- Pond 17 = 2,300 feet
- Pond 18A = 2,250 feet

The locations of the pond perimeter surface scan “cells” are shown on Figures 3-11 through 3-18 of the Plan.

#### Cap Surface Monitoring:

If monitoring during the perimeter surface scan detects PH3 at 0.05 ppm or higher, then PH3 monitoring will be conducted over the entire RCRA Pond cap surface during that sampling event. The sample train would involve the same sampling train specified for pond perimeter surface scans, using a Draeger Pac III field instrument (0-20 ppm range). This sampling would be performed on each RCRA cap surface under the same meteorological parameters as for the perimeter surface scan (i.e., no precipitation, no snow accumulation, and average



wind speeds less than 10 mph). Data will be recorded every 1 minute during the pond cap surface scan. The Draeger Pac III field instrument will be set to alarm at 0.05 ppm PH3. At any point during the pond cap surface scan, if the Draeger Pac III alarm goes off, a flag will be placed at that point and the pond cap surface scan will continue. Once the pond cap surface scan is completed in that sampling cell, each flagged area will be investigated in an attempt to determine the source of the PH3.

If triggered, the number of sampling cells for each RCRA pond will be the following:

- Pond 8S = 3.2 acres = 3 sampling cells
- Pond 8E = 4.1 acres = 4 sampling cells
- Pond 9E = 12.9 acres = 13 sampling cells
- Phase IV Ponds = 8.9 acres = 9 sampling cells
- Pond 15S = 9.4 acres = 9 sampling cells
- Pond 16S = 10.1 acres = 10 sampling cells
- Pond 17 = 9 acres = 9 sampling cells
- Pond 18A = 3.8 acres = 4 sampling cells

The locations of the pond cap surface scan cells are shown on Figures 3-11 through 3-18 of the Plan.

#### Monitoring Frequency:

As specified above, if the perimeter pipe PH3 concentrations are 10,000 ppm or greater, then perimeter surface monitoring and, if triggered during perimeter scan, cap surface monitoring will be performed monthly. If subsequent monitoring determines that the perimeter pipe PH3 concentration is below 10,000 ppm, the cap surface monitoring will be discontinued. Cap surface monitoring will resume if perimeter pipe PH3 concentrations again increase to 10,000 ppm or greater.

#### Response Actions:

If PH3 is detected at any location during the pond cap perimeter surface at or above the action level of 0.05 ppm, the following actions will be taken:

- Attempt to determine the source of the PH3 at the surface;
- Follow the perimeter surface scan with a surface scan over the entire RCRA pond cap surface;
- If a source(s) of the PH3 is identified, perform maintenance within 10 days; and
- Perform a follow-up round of perimeter surface monitoring and, if triggered during perimeter scan, cap surface monitoring within 10 days.

In addition to the above action levels, individuals performing RCRA perimeter and cap surface monitoring will be equipped with an industrial hygiene PH3 monitor, set to alarm at 0.3 ppm and 1.0 ppm as indicated in the RCRA Pond Area Work Rules. Any industrial hygiene alarm of 0.3 ppm PH3 in air (indicating PH3 concentrations in air of 0.3 to 0.99 ppm) that occur will trigger an investigation of the source, extent, and potential corrective action provided that these measures can be safely performed. Any air monitoring reading of 1.0 ppm PH3 or greater in air will also trigger an immediate (initiate within 15 minutes of such reading) round of fenceline monitoring at facility boundary monitoring sites 1 through 9, as described in Section 3.2.4 and Appendix A-5 Field Sampling Plan for RCRA Pond Gas Monitoring of this Plan.

#### Maintenance:

If the source of the PH3 detected at 0.05 ppm or greater during the perimeter and cap surface scan monitoring is identified as rodent activity (burrows) or localized erosion features (rills), then soil will be added / compacted to fill the burrows or rills. If the source is identified as an appurtenance (e.g., base of TMP), maintenance action(s) will be taken as described in Section 3.2.1 above.

Any maintenance required based on the perimeter and cap surface scan monitoring results will be performed as soon as practicable. Repairs and/or maintenance will commence within ten (10) days of the initial monitoring result that triggered the maintenance, unless delayed as specified below. Commencement of repairs and/or maintenance means performing actual field work, in the case of simple or minor maintenance, or, in the case of more complex or larger scale maintenance, initiation of engineering, planning and/or procurement of additional materials to perform the maintenance and/or repairs. Maintenance or repairs will not be performed if frozen soil / snow cover / muddy conditions exist such that cap surface could be damaged as a result of attempting to implement the repair/maintenance activity or if that work is not feasible due to frozen soil conditions (typically between November 15 through April 15) at the area where maintenance/repairs are required. If maintenance or repairs are delayed by surface conditions, any repairs or maintenance will commence within ten (10) days of the presence of acceptable cap surface conditions. In the event commencement of maintenance or repairs must be delayed beyond ten (10) days for cause(s) other than unacceptable surface conditions as described above, FMC will notify EPA within the initial 48 hours of the ten (10) day period. The notification will include a description of the reason(s) for the necessary delay and a schedule for commencing the maintenance and/or repairs. All necessary repairs will be performed by FMC. Documentation of all repairs or maintenance activities will be maintained in the Operating Record on-site as described in Section 7.3. If no discrete source is identified, a follow up round of perimeter surface monitoring (and cap surface monitoring if triggered) will be conducted within 10 days. If the follow up monitoring results in a surface detection(s) greater than 0.3 ppm and no discrete

source can be identified, EPA will be notified within 48 hours to determine what additional monitoring may be appropriate.

#### 3.2.4 CONTINGENT FENCELINE MONITORING

Contingent fenceline monitoring will be conducted if triggered by the following:

- As prescribed by the *RCRA Pond Area Work Rules*, individuals will be equipped with an industrial hygiene PH3 monitor, set to alarm at 0.3 ppm and 1.0 ppm. An alarm reading of 1.0 ppm PH3 or greater in air will trigger an immediate (initiate within 15 minutes of such reading) round of fenceline monitoring at facility boundary monitoring sites 1 through 9.
- Any ambient air reading equal to or exceeding 1.0 ppm PH3 that is registered during RCRA pond appurtenance air monitoring (i.e., approximately 12-inches outside TMP enclosures, LCDRS manholes, cap drainage lift stations or control panels, regardless of height above ground surface), RCRA pond perimeter surface monitoring or, if triggered, cap surface monitoring will trigger an immediate (initiate within 15 minutes of such reading) round of fenceline monitoring at sites 1 through 9.

The DQOs for contingent fenceline PH3 monitoring are presented in Table 1.4 of the *Gas Monitoring QAPP* (see Appendix A-4 of this *Post-Closure Plan*). The specific field sampling procedures are presented in Section 2.6 of Appendix A-5 *Field Sampling Plan for RCRA Pond Gas Monitoring* of this *Plan*. If triggered, the contingent fenceline PH3 monitoring results (and any follow-up investigation or monitoring results) will be summarized in the annual *RCRA Pond Annual Post-Closure Report*.

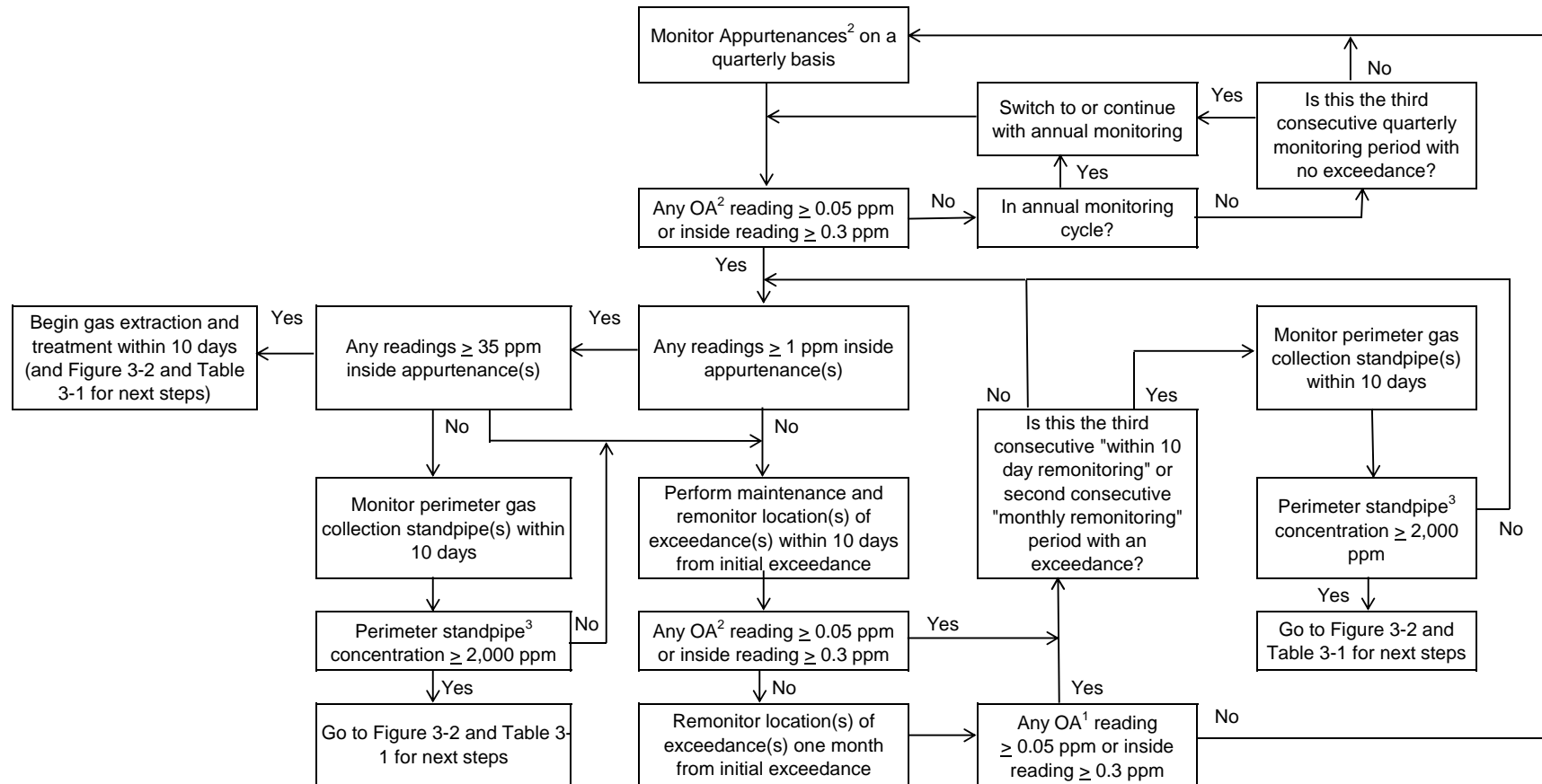
#### 3.2.5 POTENTIAL SOIL GAS MONITORING DURING CAP MAINTENANCE WORK AT RCRA PONDS

Future maintenance of the RCRA Pond final cover systems may include intrusion (excavation) within the limit of the final cover and/or within 20 feet of the anchor trench. In such an event, FMC will prepare a work plan specific to the scope of any future intrusive maintenance work within the limit of final cover that will identify worker safety procedures that may be needed in addition to those specified in the Site-Wide Health and Safety Plan and incorporated RCRA Pond Area Work Rules. Temporary soil gas monitoring probe(s) may be installed to support the project-specific job planning and safety analysis prior to performing work should intrusive maintenance work be required within the limit of final cover. This Post-Closure Plan cannot reasonably address all of the potential future maintenance scenarios and cannot replace the need for project-specific planning and safety analysis.

A procedure for the installation and monitoring of temporary soil gas probes that is based on the procedures previously utilized to support prior RCRA Pond maintenance activities is

included in Section 2.7 of Appendix A-5 Field Sampling Plan for RCRA Pond Gas Monitoring of this Plan. Note that those procedures are “generic” and the details (e.g., exact location(s) and depth(s) of any recommended soil gas probe(s)) would be determined on project-specific basis.

Figure 3-1 Decision Tree for Appurtenance Monitoring at the RCRA Ponds<sup>1</sup>

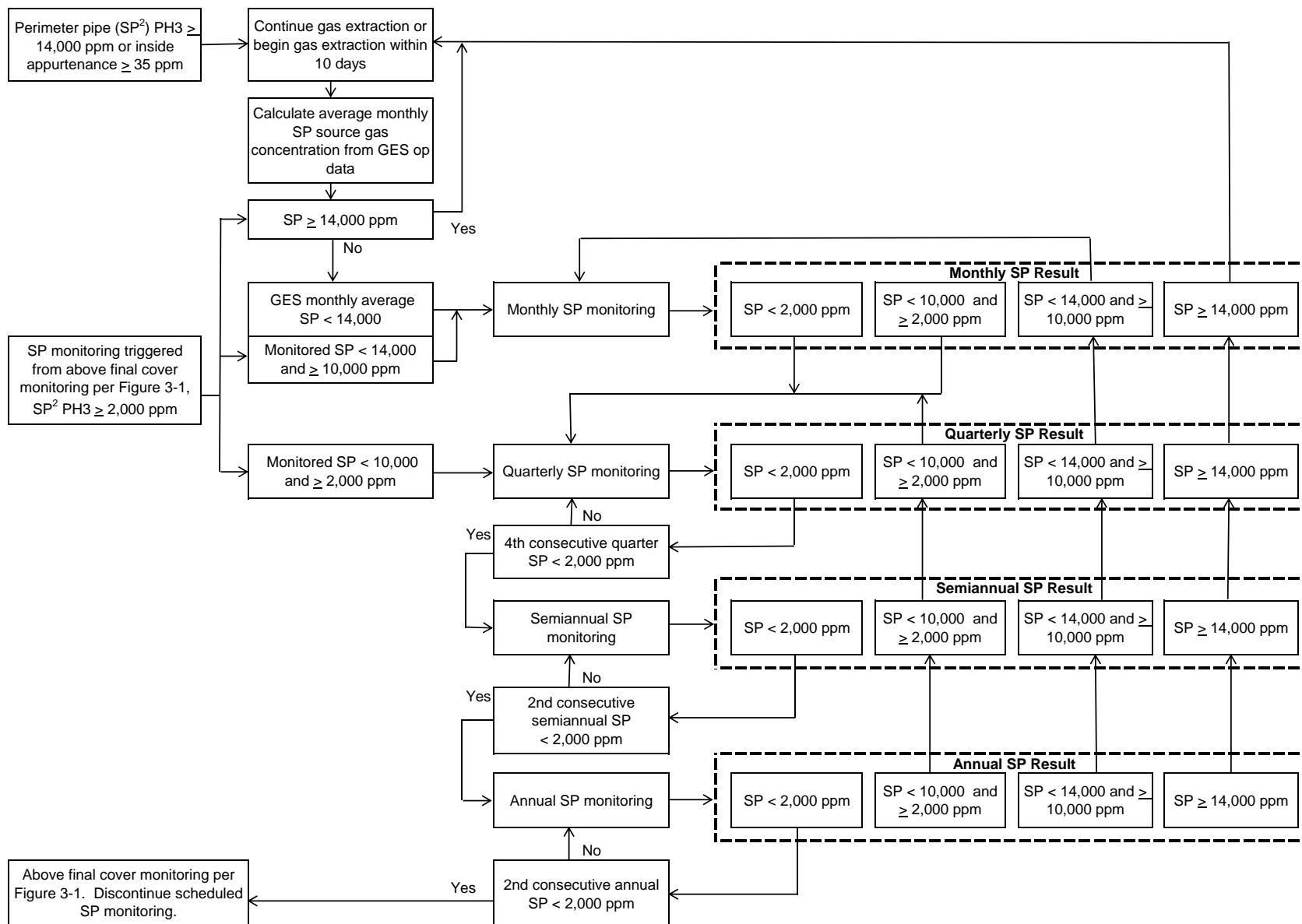


[1] The above cap phosphine monitoring on this figure is based on perimeter pipe standpipe PH3 concentrations less than or equal to 2,000 ppm. Refer to Table 3-1 for above cap monitoring program and frequency for perimeter pipe standpipe concentrations greater than 2,000 ppm PH3.

[2] Outside Appurtenance ("OA") means ambient air and leak detection monitoring.

[3] Based on highest PH3 concentration standpipe for ponds with multiple standpipes.

**Figure 3-2 Decision Tree for Perimeter Pipe Standpipe (SP) Monitoring or GES calculated SP Source Gas Extraction PH3 Concentration<sup>1</sup>**



[1] The perimeter pipe standpipe (SP) phosphine monitoring on this figure is based on perimeter pipe standpipe PH3 concentrations of 2,000 ppm or greater. Refer to Figure 3-1 for above cap monitoring program and frequency for perimeter pipe standpipe concentrations less than 2,000 ppm PH3.

[2] Based on highest PH3 concentration at perimeter pipe standpipe (SP) for ponds with multiple standpipes.





0 50 100  
Feet

*Date of Aerial Photography*  
November 4, 2007

### Legend

- ✚ Temperature monitoring point (TMP)
- ✖ Perimeter piping standpipe

2 Instrument  
Panels

ET Cap Drainage  
Sump and  
Instrument Panel

TMP-2

TMP-3

TMP-1

TMP-4

ET Cap Drainage  
Sump LS-01 and  
Instrument Panel

Map  
Area



**FMC**

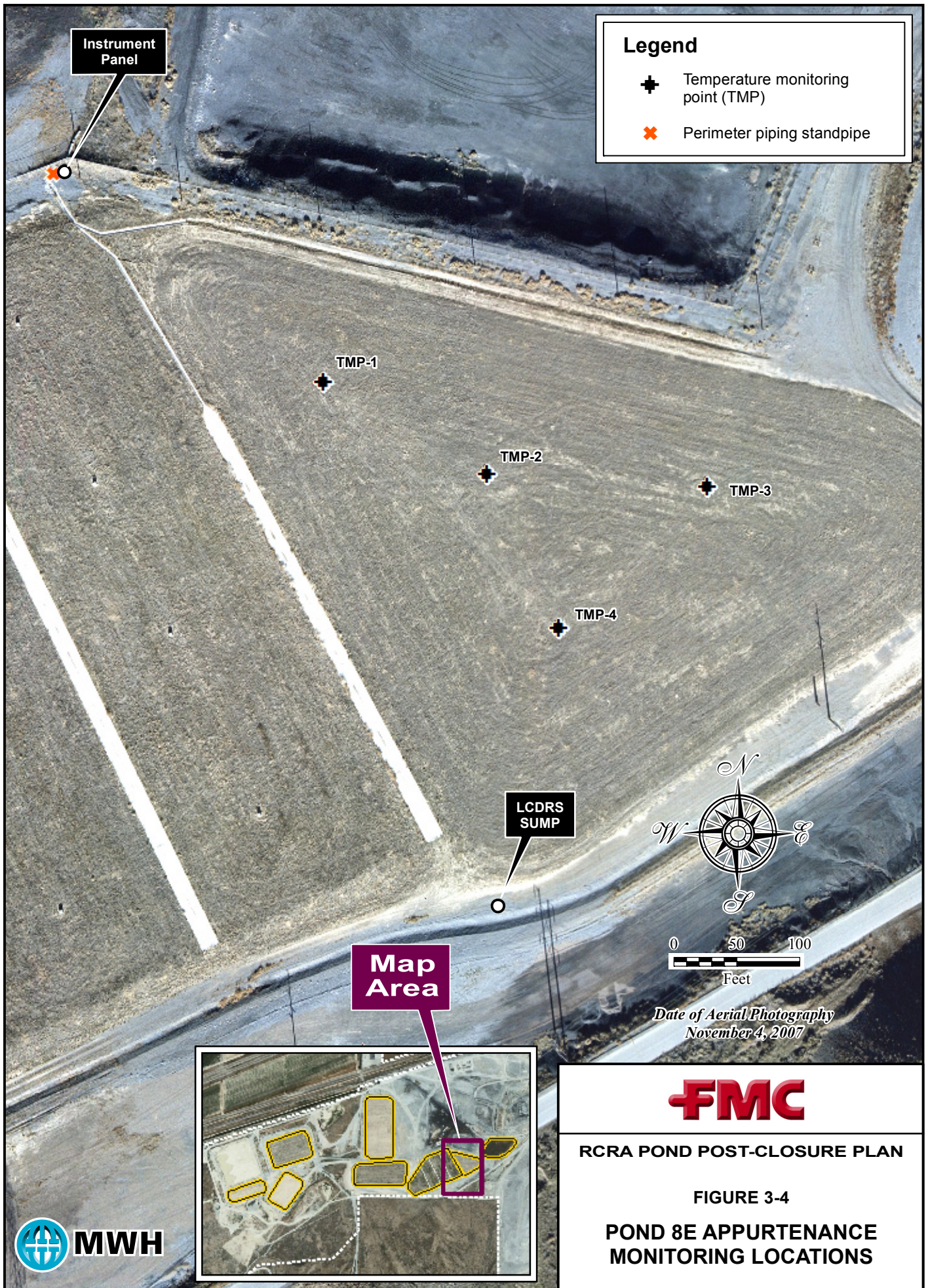
RCRA POND POST-CLOSURE PLAN

FIGURE 3-3

POND 8S APPURTENANCE  
MONITORING LOCATIONS



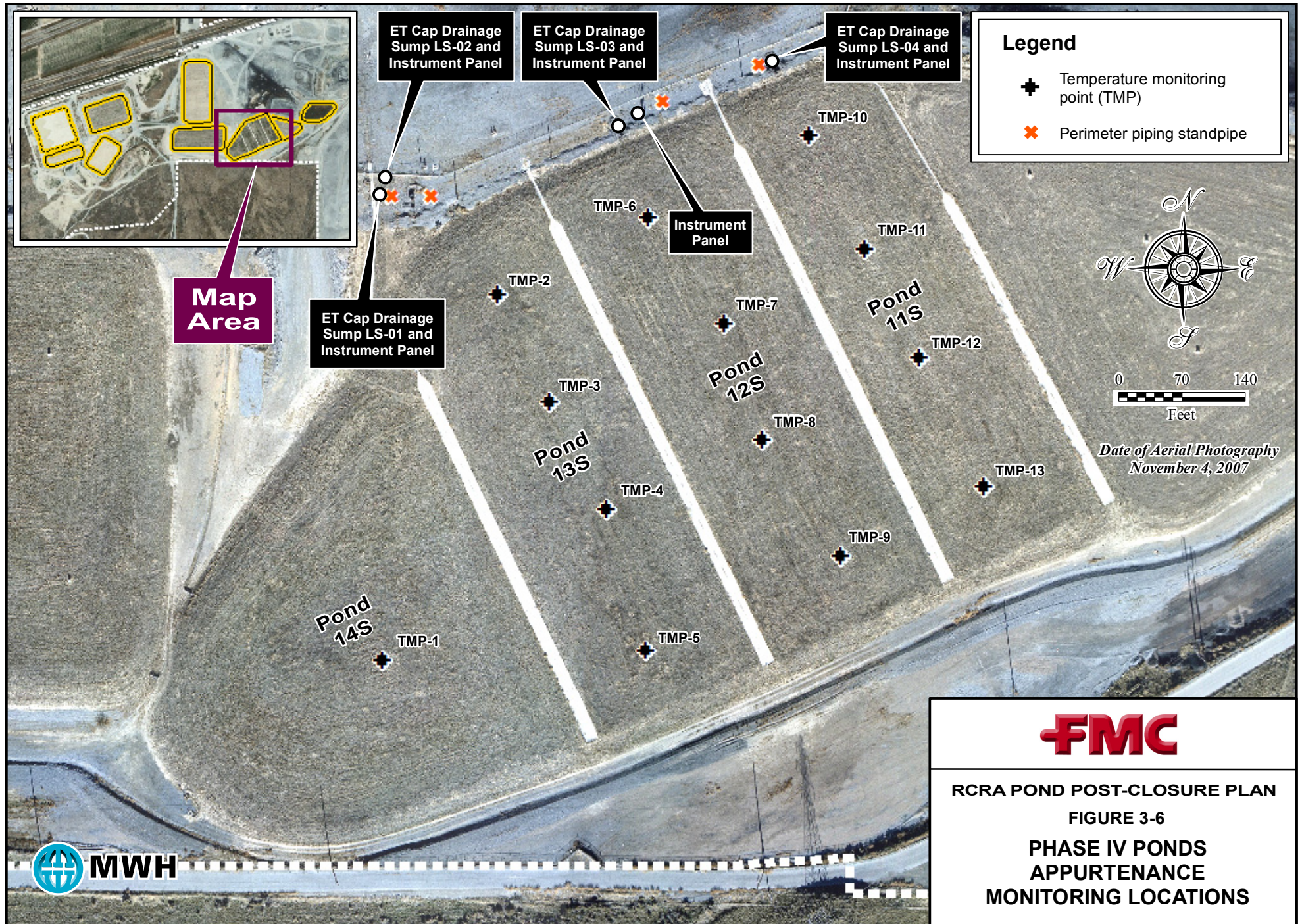




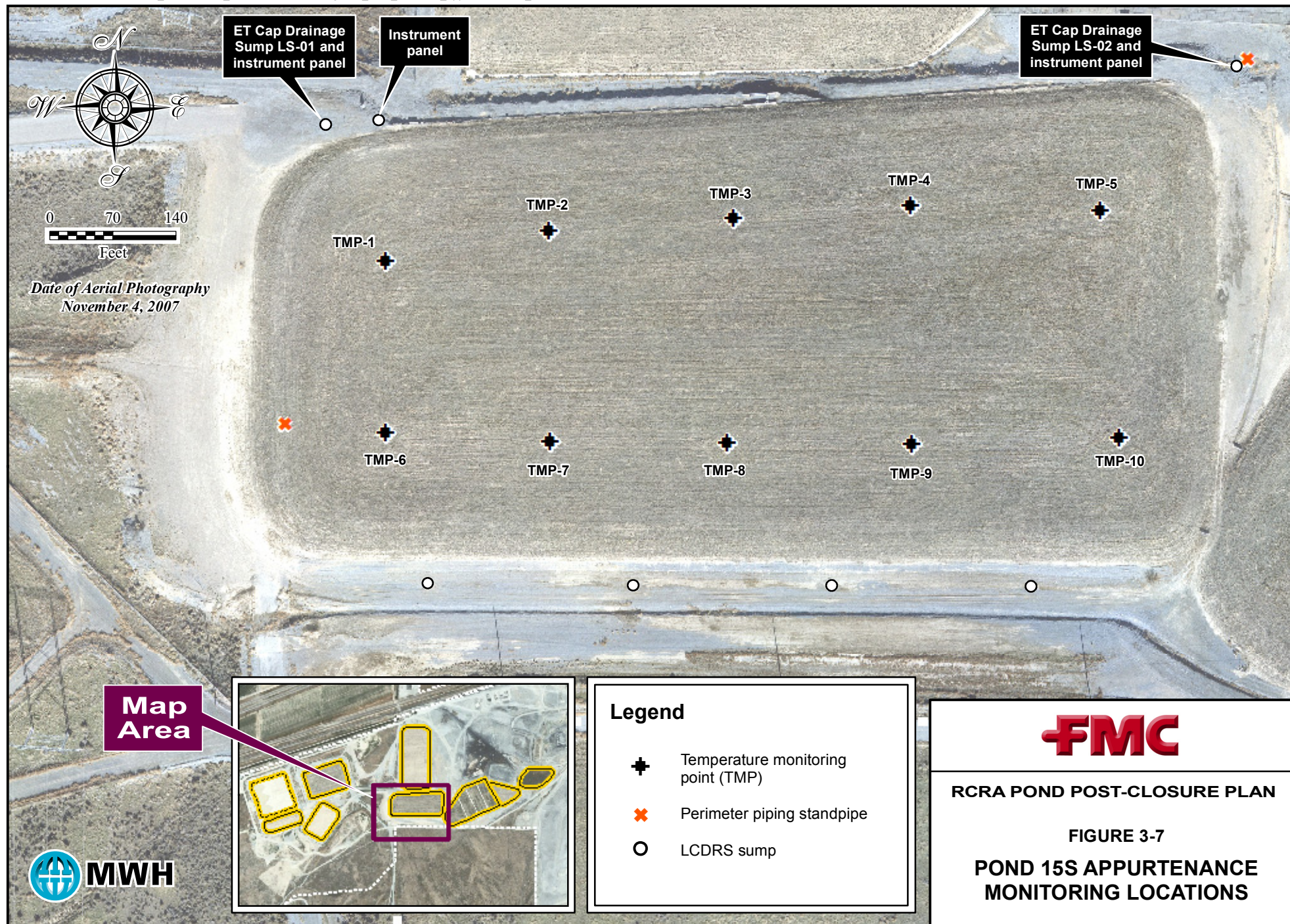




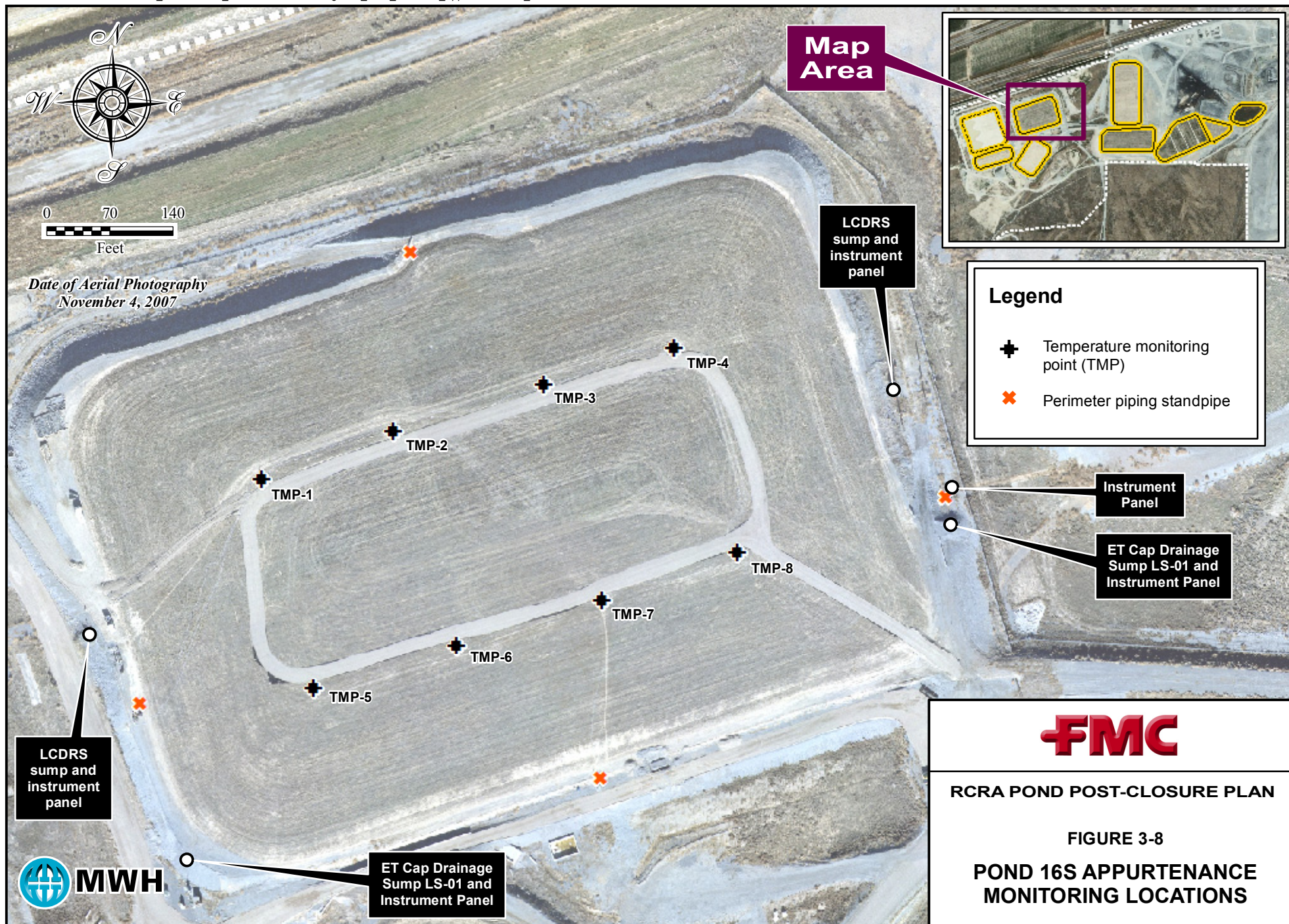








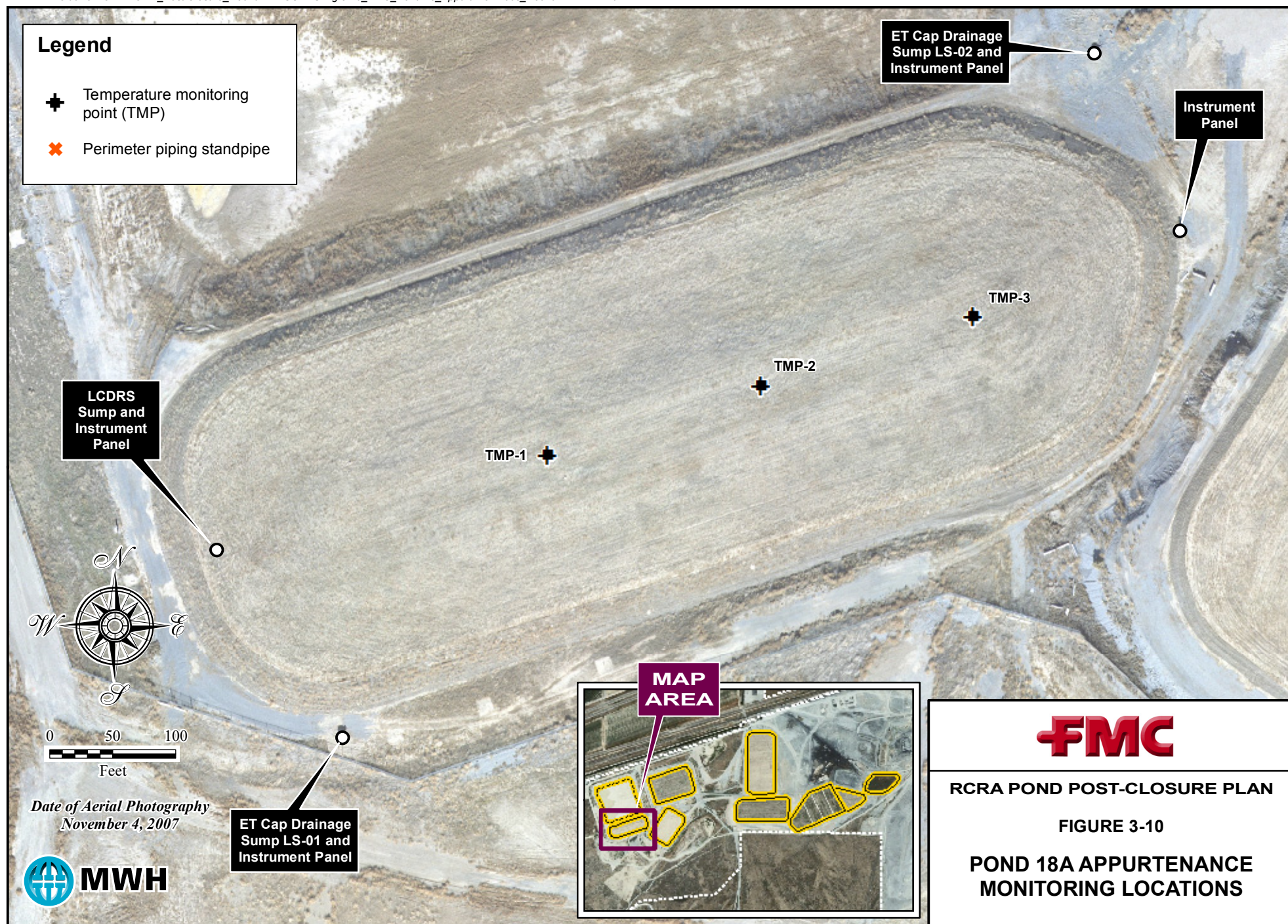
















0 50 100  
Feet

Date of Aerial Photography  
November 4, 2007

### Legend



Perimeter surface scan area



Cap surface scan cells

CELL 2  
TMP-2  
TMP-3  
CELL 3  
TMP-1  
CELL 1  
TMP-4

Map  
Area



**FMC**

RCRA POND POST-CLOSURE PLAN

FIGURE 3-11

POND 8S SURFACE SCAN  
SAMPLING LOCATIONS





## Legend



Perimeter surface scan area



Cap surface scan cells

TMP-1

CELL 1

TMP-2

CELL 4

TMP-3

CELL 2

TMP-4

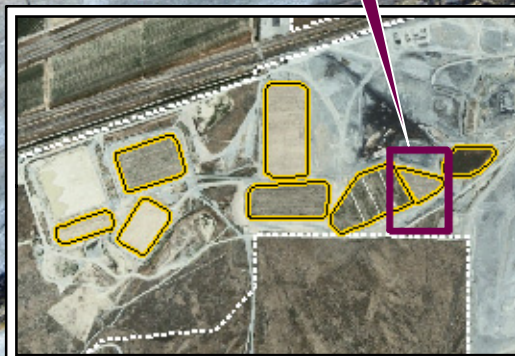
CELL 3



0 50 100  
Feet

*Date of Aerial Photography  
November 4, 2007*

**Map  
Area**



**FMC**

**RCRA POND POST-CLOSURE PLAN**

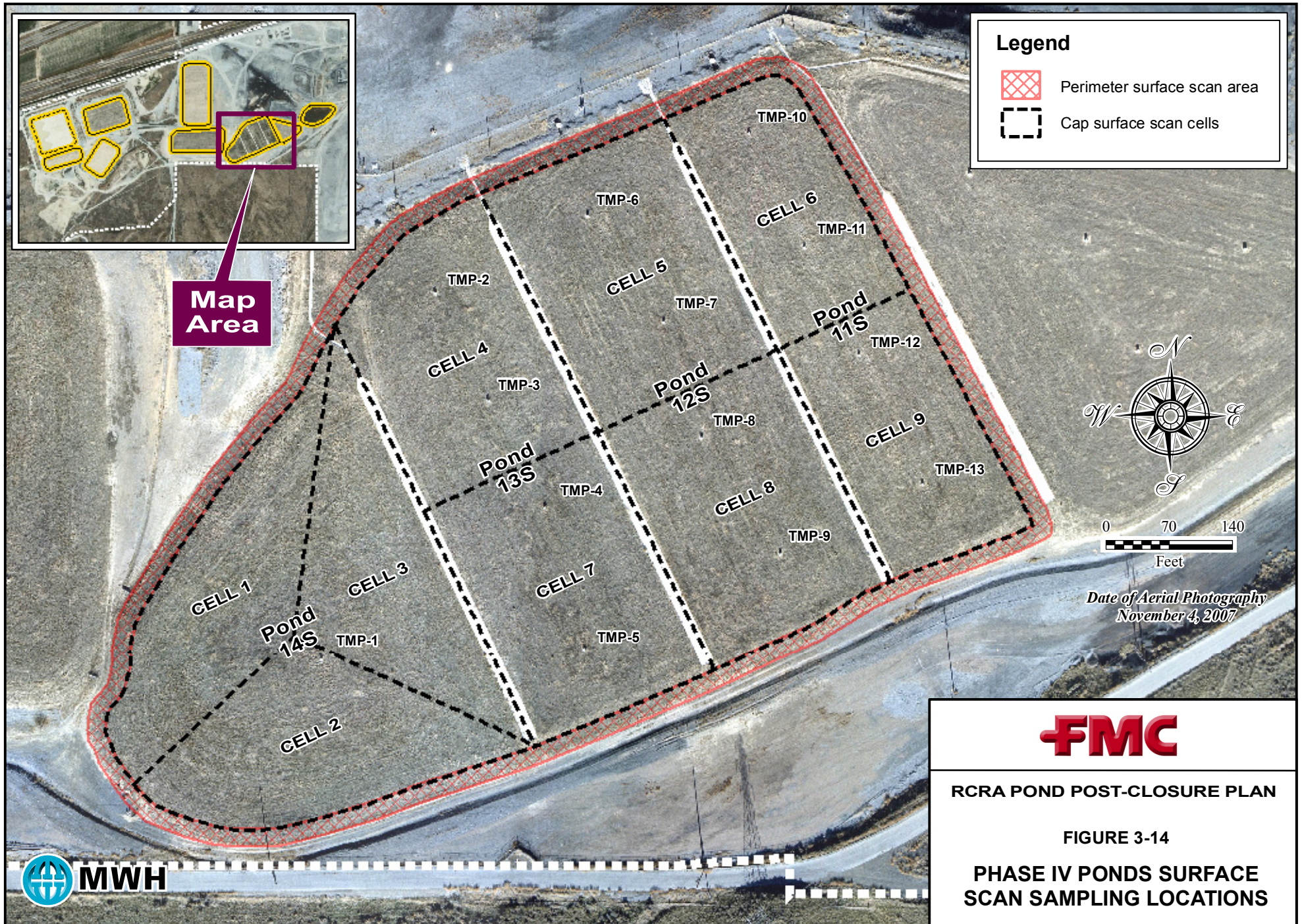
**FIGURE 3-12**

**POND 8E SURFACE SCAN  
SAMPLING LOCATIONS**

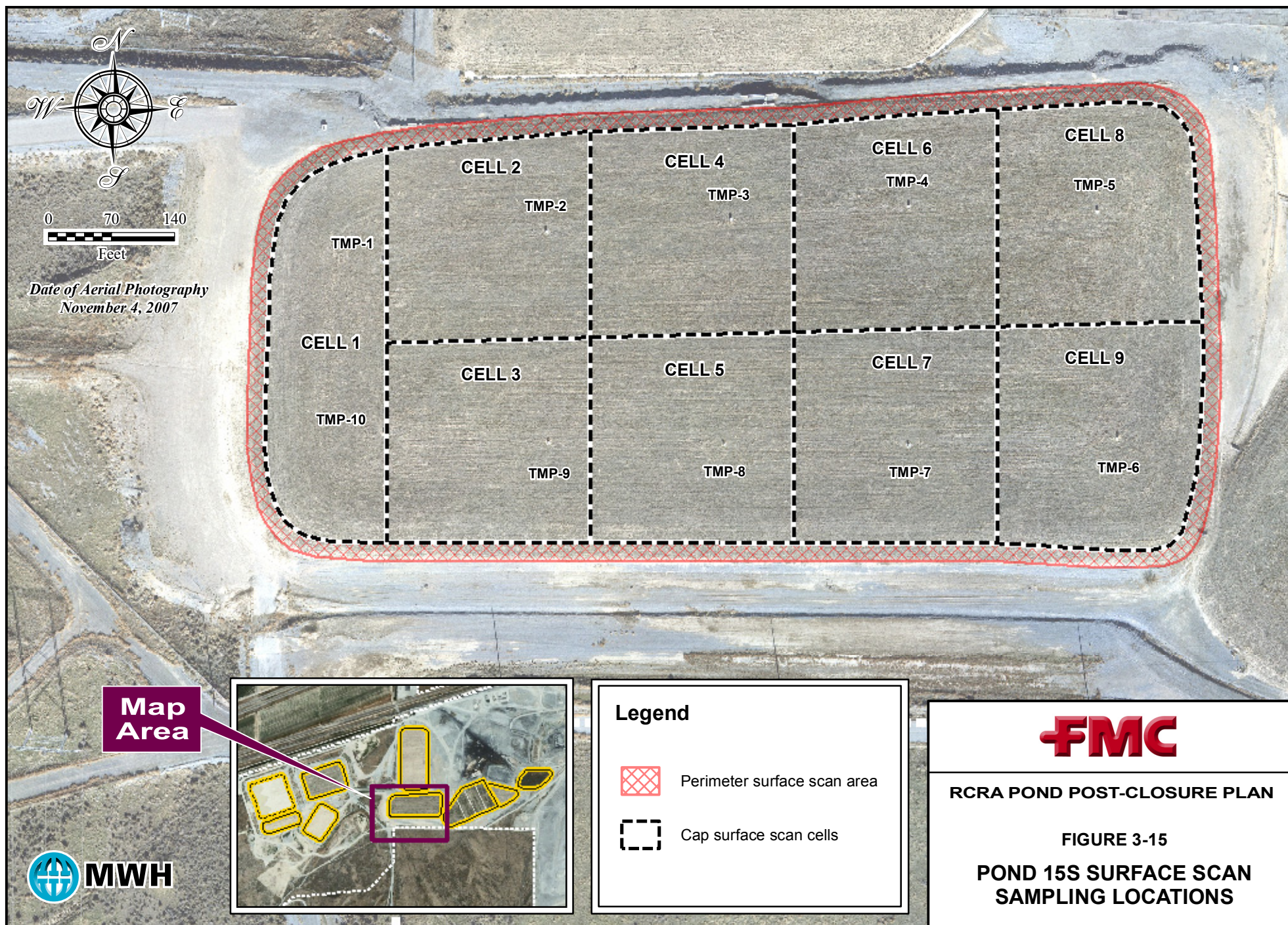




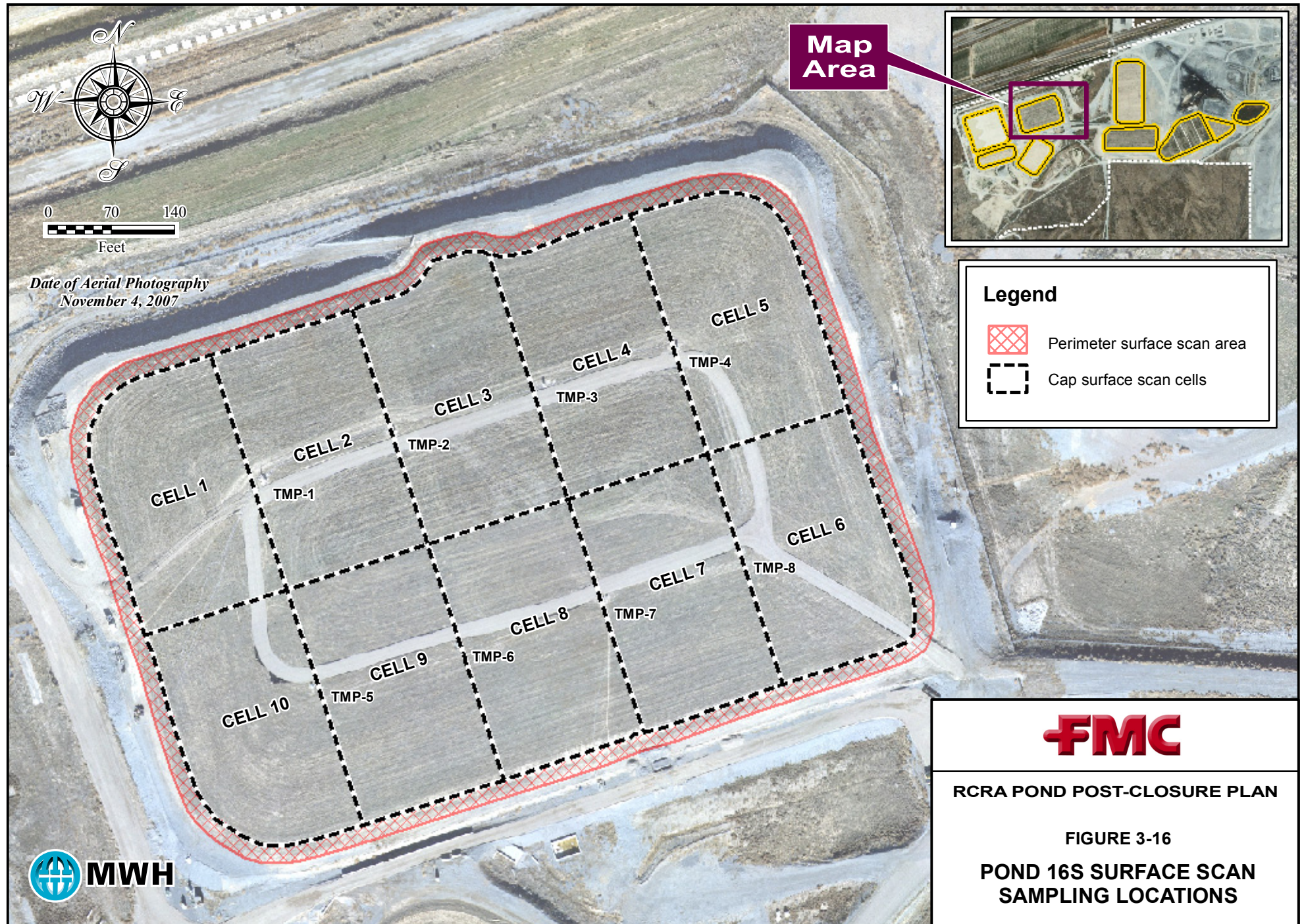
















0 50 100  
Feet

Date of Aerial Photography  
November 4, 2007



FILE: I:\FMC\idaho\RCRA\_POND\_Post\_Closure\_Dec2012\FIGURES\Fig 3-17\_FMC\_Pond17\_SurfScanSampleLocs\_Dec2012.mxd



### Legend



Perimeter surface scan area



Cap surface scan cells

Map  
Area



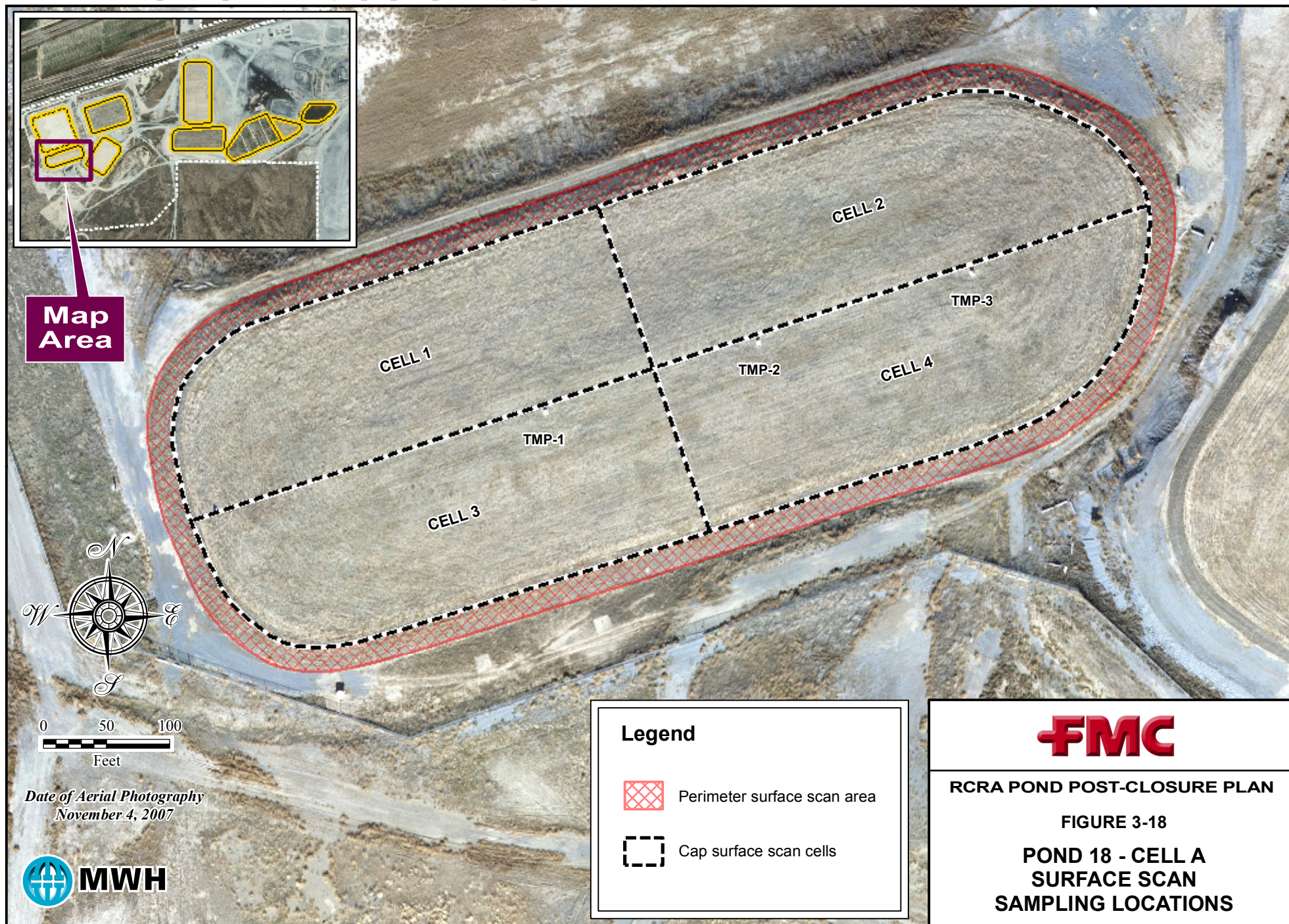
**FMC**

RCRA POND POST-CLOSURE PLAN

FIGURE 3-17

POND 17 SURFACE SCAN  
SAMPLING LOCATIONS







**Table 3-1 Phosphine Monitoring Schedule for Pond Perimeter Pipe PH3 Concentration Ranges at the RCRA Ponds**

<b>Perimeter Pipe PH3 Concentration Range<sup>1</sup></b>	<b>Monitoring Program and Schedule</b>	<b>Response If Appurtenance Ambient Air and Leak Detection Reading <math>\geq 0.05</math> ppm and/or Inside <math>\geq 0.3</math> ppm</b>	<b>Response If Inside Appurtenance Reading <math>\geq 1</math> ppm</b>	<b>Response If Inside Appurtenance Reading <math>\geq 35</math> ppm</b>
< 2,000 ppm	Continue monitoring per Figure 3-1.	Perform maintenance and remonitor within 10 days <sup>2</sup> and continue monitoring per Figure 3-1.	Perform maintenance and remonitor within 10 days <sup>2</sup> . Perform perimeter pipe monitoring within 10 days. If perimeter pipe concentration in higher range, implement corresponding monitoring program and frequency within 10 days.	Perform maintenance and remonitor within 10 days. Begin gas extraction and treatment within 10 days.
2,000-9,999 ppm	Quarterly appurtenance ambient air, leak detection and inside monitoring.	Perform maintenance and remonitor within 10 days <sup>2</sup> and continue monitoring (quarterly without reversion to annual) per Figure 3-1.		
<b>Perimeter Pipe PH3 Concentration Range<sup>1</sup></b>	<b>Monitoring Program and Schedule</b>	<b>Response If Appurtenance Ambient Air and Leak Detection Reading and/or perimeter surface scan reading <math>\geq 0.05</math> ppm and/or Inside <math>&gt; 0.3</math> ppm</b>	<b>Response If Inside Appurtenance Reading <math>\geq 1</math> ppm and/or perimeter surface scan reading <math>\geq 0.05</math> ppm</b>	<b>Response If Inside Appurtenance Reading <math>\geq 35</math> ppm</b>
10,000-13,999 ppm	Monthly appurtenance ambient air, leak detection and inside monitoring. Initiate monthly pond perimeter surface scan monitoring.	If any ambient air or leak detection appurtenance reading $\geq 0.05$ ppm or inside reading $\geq 0.3$ ppm, perform maintenance and remonitor within 10 days; and/or	Perform maintenance and remonitor within 10 days. Perform perimeter pipe monitoring within 10 days. If perimeter surface scan reading $\geq 0.05$ ppm, also perform full cap surface scan and area investigation.	Perform maintenance and remonitor within 10 days. Begin gas extraction and treatment within 10 days.
$\geq 14,000$ ppm	Begin gas extraction and treatment within 10 days. Monthly appurtenance ambient air, leak detection and inside monitoring, and pond perimeter surface scan monitoring.	If perimeter surface scan reading $\geq 0.05$ ppm, perform full cap surface scan and area investigation, perform maintenance and remonitor within 10 days.	Perform maintenance and remonitor within 10 days. If appurtenance remonitoring reading $\geq 1$ ppm, increase gas extraction PH3 mass removal rate.	Perform maintenance and remonitor within 10 days. If remonitoring reading $\geq 35$ ppm, increase gas extraction PH3 mass removal rate.

(1) Based on highest PH3 concentration standpipe for ponds with multiple standpipes.

(2) Proceed consistent with the appurtenance remonitoring "loop" on Figure 3-1. For example, if the within 10 day re-monitoring outside appurtenance reading(s) are less than 0.05 ppm and the inside reading(s) are less than 0.3 ppm, then remonitor one month from initial exceedance.

**Table 3-2 (Page 1 of 2)**  
**RCRA Pond Gas Monitoring**  
**Appurtenance Monitoring Summary**

	<b>Pond</b>	<b>TMP Enclosures</b>	<b>ET Cap Drainage and LCDRS Sumps</b>	<b>Instrument Panels <sup>1</sup></b>	<b>Perimeter Piping Standpipes</b>															
No. of Locations	<b>Pond 8E</b>	4 TMP Enclosures	0 ET Cap Drainage Sumps 1 LCDRS Sump	1 Instrument Panel	1 Standpipe															
	<b>Pond 9E</b>	10 TMP Enclosures	0 ET Cap Drainage Sumps 6 LCDRS Sumps	2 Instrument Panel	1 Standpipe															
	<b>Pond 8S</b>	4 TMP Enclosures	2 ET Cap Drainage Sumps 0 LCDRS Sumps	4 Instrument Panels	1 Standpipe															
	<b>Phase IV</b>	13 TMP Enclosures	4 ET Cap Drainage Sumps 0 LCDRS Sumps	5 Instrument Panels	4 Standpipes															
	<b>Pond 15S</b>	10 TMP Enclosures	2 ET Cap Drainage Sumps 4 LCDRS Sumps	3 Instrument Panels	2 Standpipes															
	<b>Pond 16S</b>	8 TMP Enclosures	2 ET Cap Drainage Sumps 2 LCDRS Sumps	5 Instrument Panel	4 Standpipes															
	<b>Pond 17</b>	6 TMP Enclosures	0 ET Cap Drainage Sumps 1 LCDRS Sump	2 Instrument Panel	5 Standpipes															
	<b>Pond 18 A</b>	3 TMP Enclosures	2 ET Cap Drainage Sumps 1 LCDRS Sump	4 Instrument Panels	2 Standpipes															
Measurement Location	Air Monitoring: 12 inches outside perimeter of appurtenance. Leak Monitoring: 1-2 inches from potential leakage points. Inside: 1.5 feet inside TMP enclosures.		Air Monitoring: 12 inches outside perimeter of appurtenance. Leak Monitoring: 1-2 inches from potential leakage points. Inside: 3-4 feet inside ET Cap Drainage and LCDRS sumps.	Air Monitoring: 12 inches outside perimeter of appurtenance. Leak Monitoring: 1-2 inches from potential leakage points. Inside: 6 inches inside instrument panels.	Air Monitoring: 12 inches outside perimeter of appurtenance. Leak Monitoring: 1-2 inches from potential leakage points															
Frequency	<table><tr><td></td><td><u>Perimeter Pipe PH3 Concentration</u></td><td><u>Monitoring Frequency</u></td></tr><tr><td></td><td>&lt; 2,000 ppm</td><td>Quarterly / Annually <sup>2</sup></td></tr><tr><td></td><td>2,000 – 9,999 ppm</td><td>Quarterly</td></tr><tr><td></td><td>10,000 – 13,999 ppm</td><td>Monthly</td></tr><tr><td></td><td>≥ 14,000 ppm</td><td>Monthly</td></tr></table>						<u>Perimeter Pipe PH3 Concentration</u>	<u>Monitoring Frequency</u>		< 2,000 ppm	Quarterly / Annually <sup>2</sup>		2,000 – 9,999 ppm	Quarterly		10,000 – 13,999 ppm	Monthly		≥ 14,000 ppm	Monthly
	<u>Perimeter Pipe PH3 Concentration</u>	<u>Monitoring Frequency</u>																		
	< 2,000 ppm	Quarterly / Annually <sup>2</sup>																		
	2,000 – 9,999 ppm	Quarterly																		
	10,000 – 13,999 ppm	Monthly																		
	≥ 14,000 ppm	Monthly																		
Procedure	Appendix A-5 <i>Field Sampling Plan for RCRA Pond Gas Monitoring.</i>																			
Related Figures	Figures 3-3 through 3-10 of the Plan.																			
Measurement Method	Draeger Pac III Field Instrument <sup>3</sup> 0-20 ppm range or 0-1,000 range if inside appurtenance > 20 ppm				Draeger Pac III Field Instrument <sup>3</sup> 0-20 ppm range															
QAPP	Appendix A-4 RCRA Pond Quality Assurance Project Plan for Gas Monitoring																			
Action Limit(s) <sup>4</sup>	Air or Leak Detection Monitoring PH3 ≥ 0.05 ppm Inside Monitoring PH3 ≥ 0.3 ppm; ≥ 1.0 ppm and ≥ 35 ppm				Air or Leak Detection Monitoring PH3 ≥ 0.05 ppm															
Actions	<u>Air or Leak Detection Monitoring PH3 &gt; 0.05 ppm or Inside Monitoring PH3 &gt; 0.3 ppm</u> <ul style="list-style-type: none"><li>Perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial exceedance.</li><li>If air or leak detection re-monitoring &lt; 0.05 ppm and/or inside re-monitoring &lt; 0.3 ppm, re-monitor location(s) of exceedance(s) one month from initial exceedance.</li><li>If air or leak detection re-monitoring ≥ 0.05 ppm and/or inside re-monitoring ≥ 0.3 ppm, perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial (or re-monitoring) exceedance.</li><li>If three consecutive air or leak detection re-monitoring results ≥ 0.05 ppm and/or inside re-monitoring ≥ 0.3 ppm, monitor perimeter gas collection standpipe within 10 days.</li></ul> <u>Inside Monitoring PH3 &gt; 1.0 ppm</u> <ul style="list-style-type: none"><li>Perform maintenance and re-monitoring per actions for Inside Monitoring ≥ 0.3 ppm above.</li><li>Monitor perimeter gas collection standpipe(s) within 10 days – change frequency of monitoring if indicated by perimeter pipe PH3 concentration.</li></ul> <u>Inside Monitoring PH3 &gt; 35 ppm</u> <ul style="list-style-type: none"><li>Begin gas extraction and treatment within 10 days – change frequency of monitoring based on perimeter pipe PH3 concentration (GES operating data or perimeter pipe monitoring) or increase PH3 mass removal rate if gas extraction and treatment in progress.</li></ul>				<ul style="list-style-type: none"><li>Perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial exceedance.</li><li>If re-monitoring &lt; 0.05 ppm, re-monitor location(s) of exceedance(s) one month from initial exceedance.</li><li>If re-monitoring ≥ 0.05 ppm, perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial (or re-monitoring) exceedance.</li><li>If three consecutive re-monitoring results ≥ 0.05 ppm, monitor perimeter gas collection standpipe within 10 days.</li></ul>															
Reporting	Appurtenance monitoring results will be reported in the <i>RCRA Pond Annual Post-Closure Report.</i>																			



**Table 3-2 (Page 2 of 2)**  
**RCRA Pond Gas Monitoring**  
**Appurtenance Monitoring Summary**

**NOTES:**

- <sup>1</sup> The instrument panels associated with the discontinued temperature and pressure monitoring are no longer used to acquire / display temperature or pressure data, but will be included in the appurtenance gas monitoring as instrument panels per the Plan and Section 2.3.6 of the FSP. FMC may submit a plan to EPA to disconnect and remove these instrument panels. Upon EPA approval, the panels will be removed and will be eliminated from the instrument panel gas monitoring.
- <sup>2</sup> For RCRA Ponds with perimeter pipe PH3 concentrations below 2,000 ppm, this monitoring will initially be performed on a quarterly basis. If there are no PH3 detections at or above the PH3 action levels for three (3) consecutive quarters of monitoring, the frequency will be reduced to annually for that pond. If there is a PH3 detection above the action levels during annual monitoring, the monitoring will return to quarterly (or other frequency corresponding to the perimeter pipe PH3 concentration).
- <sup>3</sup> Draeger has discontinued manufacturing the Pac III monitors but according to a Draeger representative they will continue to provide sensors and basic repairs for the PAC III. The PAC III is being replaced by the Draeger PAC 7000 for the low range PH3 sensor (0 – 20 ppm) and the by the X-AM 5000 for the high-range PH3 sensor (0-1,000 ppm). FMC may utilize the Pac III, Pac 7000, X-AM 5000 or equivalent monitors for the gas monitoring program.
- <sup>4</sup> The *RCRA Pond Area Work Rules* require that employees immediately relocate from a work area if PH3 concentrations in the working area reach or exceed 1.0 ppm. Sampling will be conducted only if conformance to these work rules can be achieved.

**Table 3-3 (Page 1 of 2)**  
**RCRA Pond Gas Monitoring**  
**Cap Perimeter and Cap Surface Scan Monitoring Summary**

	<b>Pond</b>	<b>Cap Perimeter Surface Scan</b>	<b>Cap Surface Scan</b>
No. of Locations	<b>Pond 8E</b>	1,725 feet long by 6 feet wide	4.1 acres = 4 sampling cells
	<b>Pond 9E</b>	3,520 feet long by 6 feet wide	12.9 acres = 13 sampling cells
	<b>Pond 8S</b>	1,550 feet long by 6 feet wide	3.2 acres = 3 sampling cells
	<b>Phase IV</b>	2,970 feet long by 6 feet wide	8.9 acres = 9 sampling cells
	<b>Pond 15S</b>	3,080 feet long by 6 feet wide	9.4 acres = 9 sampling cells
	<b>Pond 16S</b>	2,850 feet long by 6 feet wide	10.2 acres = 10 sampling cells
	<b>Pond 17</b>	2,300 feet long by 6 feet wide	9.0 acres = 9 sampling cells
	<b>Pond 18 A</b>	2,250 feet long by 6 feet wide	3.8 acres = 4 sampling cells
Measurement Location	Pond perimeter from anchor trench to approximate 6 feet outside anchor trench. 1 to 2 inches ags <sup>1</sup> .		Over cap surface inside cap anchor trench. 1 to 2 inches ags <sup>1</sup> .
Frequency/Schedule <sup>2</sup>	Monthly		Sampled only when monthly cap perimeter surface scan measurement $\geq$ 0.05 ppm PH3.
Procedure	Appendix A-5 <i>Field Sampling Plan for RCRA Pond Gas Monitoring</i> .		
Restrictions/Limitations <sup>3</sup>	Dependent on surface and weather conditions. <sup>3</sup>		Dependent on surface and weather conditions. <sup>3</sup>
Related Figures	Figures 3-11 through 3-18 of the Plan.		
Measurement Method	Draeger Pac III Field Instrument <sup>4</sup> 0-20 ppm range		Draeger Pac III Field Instrument <sup>4</sup> 0-20 ppm range
QAPP	Appendix A-4 <i>RCRA Pond Quality Assurance Project Plan for Gas Monitoring</i> .		
Action Limit(s) <sup>5</sup>	0.05 ppm PH3 or greater.		0.05 ppm PH3 or greater.
Actions	1) Flag and investigate potential source and extent. 2) Perform cap surface monitoring on the entire RCRA cap. 3) Perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial exceedance.		1) Flag and investigate potential source and extent. 2) Perform maintenance and re-monitor location(s) of exceedance(s) within 10 days from initial exceedance.
Reporting	Cap perimeter and cap surface scan monitoring results will be reported in the <i>RCRA Pond Annual Post-Closure Report</i> .		

**Table 3-3 (Page 2 of 2)**  
**RCRA Pond Gas Monitoring**  
**Cap Perimeter and Cap Surface Scan Monitoring Summary**

NOTES:

1 ags means above ground surface.

<sup>2</sup> If the RCRA Pond perimeter pipe PH3 concentration is greater than 10,000 ppm, cap perimeter and cap, if triggered, surface scan monitoring will be performed monthly.

<sup>3</sup> Surface scans require specific surface and weather conditions be met. The surface scanning will not be performed 1) during rain or snow, 2) during average wind speeds > 10 mph or gusts > 15 mph, or 3) snow or water on the surface. Sampling will be rescheduled as soon as practicable, but may be postponed until the next month, e.g., long duration snow cover.

<sup>4</sup> Draeger has discontinued manufacturing the Pac III monitors but according to a Draeger representative they will continue to provide sensors and basic repairs for the PAC III. The PAC III is being replaced by the Draeger PAC 7000 for the low range PH3 sensor (0 – 20 ppm). FMC may utilize the Pac III, Pac 7000, or equivalent monitors for the gas monitoring program.

<sup>5</sup> The *RCRA Pond Area Work Rules* require that employees immediately relocate from a work area if PH3 concentrations in the working area reach or exceed 1.0 ppm. Sampling will be conducted only if conformance to these work rules can be achieved.